DeviceSafety

Central venous catheters and cardiac tamponade

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AN INFANT BORN at 28 weeks gestation had extremely low birth weight and respiratory distress syndrome. A central venous line was placed in the right atrium to infuse total parenteral nutrition. After **3** days, the infant suddenly developed apnea and bradycardia. Despite resuscitation efforts, the infant died.

What went wrong?

Cardiac tamponade occurs when a sudden fluid accumulation in the pericardial space compresses the heart. An autopsy on the infant showed that the catheter tip in the right atrium eroded the myocardial wall, allowing fluid to enter the pericardium.

What precautions can you take?

- If possible, avoid placement of a central line in a child's arm; the catheter tip can move if the child moves and may trigger tamponade.
- Minimize movement of the catheter insertion site.
- Obtain frontal and lateral chest X-rays to confirm catheter tip location when a central line is inserted and any time the tip position is uncertain.
- Regularly verify blood return to ensure catheter tip placement and to monitor for perforation. Don't infuse fluids or medications through the catheter until you confirm blood return. If you don't get a blood return, obtain X-rays and consider withdrawing or removing the central line.
- Suspect cardiac tamponade in any patient with a central venous catheter whose condition suddenly deteriorates. Common signs include cyanosis, dilated neck veins, increased intravascular pressure, decreased arterial pressure, muffled heart sounds, sudden respiratory changes, sudden and dramatic changes in pulse rate or strength (including pulsus paradoxus), and unanticipated cardiac arrest. N

For more information about cardiac tamponade reported to the FDA, or for a comprehensive literature list, please contact the author at DYB@CDRH.FDA.GOV.

Although you need to support the adverse event–reporting policy of your health care facility, you may voluntarily report a medical device that doesn't perform as intended by calling MedWatch at 1-800-FDA-1088 (fax: 1-800-FDA-0178). The opinions and statements in this report are those of the author and may not reflect the views of the Department of Health and Human Services. Device Safetv is coordinated by Beverly Gallauresi, RN, BS, MPH.